DOCUMENT RESUME

ED 414 277 SP 037 681

AUTHOR Sherry, Lorraine
TITLE Linking Technology with Promising Practices To Improve Teaching and Learning.
PUB DATE 1997-10-00
NOTE 9p.
PUB TYPE Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Uses in Education; *Educational Technology; Elementary School Teachers; Elementary Secondary Education; Higher Education; *Internet; Preservice Teacher Education; Secondary School Teachers; Student Projects; Teaching Methods
IDENTIFIERS *Authentic Assessment

ABSTRACT

Many of today's teachers are receiving training to perfect their technology skills. One place to begin technology integration during preservice education is at the instructional design level, focusing on student performance assessments and alignment of school curricula with state standards. The Teachers' Internet Use Guide emphasizes alignment of standards and lessons. The Texas Essential Knowledge and Skills standards, with which the Use Guide is aligned, focus on authentic student performance. Technology also offers promise for student projects. Students can use technology to complete authentic projects. However, if they use the Internet to get information, teachers must be concerned about originality and plagiarism. An alternative involves combining student products and performances, to be assessed as a portfolio item. With feedback from teachers, students progressively revise and refine their own products. This teaches them to create and edit professional material. When they complete the product, they can communicate their findings to others using presentation software. This method is important because students learn with peers in a global context rather than in isolation, producing original products and performances that are valuable to themselves and others and that lend themselves to authentic assessment. (SM)

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Linking Technology with Promising Practices to Improve Teaching and Learning

Lorraine Sherry
Research Associate

RMC Research Corporation
1512 Larimer Street, Suite 540
Denver CO 80202

Phone: (800) 922-3636
FAX: (303) 825-1626
sherry@rmcdenver.com
lsherry@carbon.cudenver.edu

October 1997
STAR Center Newsletter
(Support for Texas Academic Renewal)

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Linking Technology with Promising Practices to Improve Teaching and Learning

> If you believe that the day has finally come for technology to transform teaching and learning, it's time for the nation's teachers to be prepared. (Arthur E. Wise, president of NCATE.)

School technology spending is on the rise. According to a national survey (White, 1997), the nation's schools are predicted to spend an estimated $5.2 billion on educational technology during the 1997-98 school year, up 21 percent from 1996-97 spending. Schools have focused their technology plans on putting the infrastructure in place for networking and Internet access. Teachers have been honing their technology skills at inservice training sessions (Sherry, 1997) and statewide conferences. They are also participating in professional development workshops for state, school district, and school personnel to provide support for programs authorized by the IASA, such as the recent technology planning sessions conducted in Edinburgh and San Antonio, Texas this September by our STAR Center technology team members.

These efforts, however, represent activities that address only one piece of the puzzle. As William Reid aptly points out,

> ...the work of curriculum and schooling is labor-intensive. Changing what schools do is largely a matter of changing what people do, not of

> introducing more sophisticated equipment...the technology of curriculum is a matter of cultural tradition and personal knowledge rather than of processes that can be built into the specifications of tools or computers. (Reid, 1992, p. 145.)

Training teachers to use technology is a very different process from giving them a vision and plan for technology that reinforces new conceptual models of teaching and learning, and from identifying and making available exemplary practices of technology use in the 21st Century (NCATE, 1997).

Some colleges and universities are making thoughtful and productive use of technology in their preservice education programs. For example, at Valley City State University in Valley City, ND, teachers create electronic portfolios. At the University of Northern Iowa in Cedar Falls, teachers can view live broadcasts from a lab school on campus and converse with the teacher using push-to-talk microphones. At the University of Colorado at Denver, the Initial Teacher Education program stresses the integration of technology across the entire curriculum - math, science, language arts, foundations - not just in the technology courses. Other colleges and universities are still making the same mistake that was made at the school level, namely, they still treat technology as a special addition to the teacher education curriculum...but not a topic that needs to be incorporated across the entire teacher education program (Bradley, 1997).

Using Technology to Improve Teaching and Learning

Since there is a great emphasis on both national and statewide testing, a good place to begin the technology integration process is at the instructional design level, with a focus on student performance assessments and the alignment of school curricula with state standards. The Teachers' Internet Use Guide, located at the URL:http:// www.rmcdenver.com/useguide/index.htm, was developed by the technology team at RMC Research Corporation, one of the STAR Center (Comprehensive Regional Assistance Center) partners, emphasizes the alignment of standards and lessons. The Texas Essential Knowledge and Skills (TEKS) standards, with which the Use Guide is aligned, focus on authentic student performance rather than rote memorization of facts and figures. Similarly, Kansas has phased in a new set of tests with performance components that require students to write about or otherwise demonstrate their knowledge.

Setting the types of performance goals that are found in IASA may specify the end result that teachers hope their students will be able to achieve, but "it has nothing to say about what kind of curriculum making could produce such results" (Reid, 1992, p. 144). It also does not specify the instructional strategies that teachers might use to achieve such expert performance. Here is where technology does offer a promise to transform teaching and learning, and where promising practices with

technology ought to be identified.

Promising Practices for Student Projects

Many principals do not believe that children are all at the same place at one time, nor should they proceed from one grade to the next in lockstep. Many schools use multi-age classrooms where students from higher grades work together with younger students in small groups, moving about the room, focusing on authentic projects. Harrison Elementary School, Cedar Rapids, Iowa, has a "Reading Buddies" program that uses students from higher grades to help tutor younger pupils. Nederland Elementary School in Colorado helped 4th through 8th grade students learn about astronomy and oceanography by conversing with astronauts and Jason Project scientists, by doing research on the Web under the guidance of their teacher, and by creating their own Web page with information and guidance from the Jason Project oceanographers. One strategy that is currently being tested, and that is becoming more widespread in practice, is a reconceptualization of the traditional student writing project or term paper. In the past, teachers assigned a topic, students did their research in the library and then handed in their work as a paper product to be graded as an essay. Plagiarism was indeed possible, but experienced teachers were aware of the potential for student abuse and were quick to spot the pilfered pieces.

With access to the Internet, students can do their research

from home, in the lab, or on the classroom's computer, copy excerpts from Web pages without evaluating the veracity of the information they contain, string the excerpts together without citing the original source, and hand in a paper as their own. Teachers are hard pressed to track down the students' information sources, especially if they are not cited properly or if the information is highly volatile. Nor is it always possible to ascertain whether a particular section of a student's essay is original work or copied verbatim from a Web site. Clearly, the tried and true practice of assigning and grading essays does not port well to technology-savvy students today.

An alternative that has met with success at both the elementary and the high school level is a combination of student products and performances, to be assessed as a portfolio item. Once the topic has been assigned, students may work collaboratively on a writing product, but they are expected to hand in drafts of their work-in-progress, with sources cited in the manner that the teacher specifies. For example, the American Psychological Association (APA) has posted their guidelines on their Web site, located at the URL: http://www.apa.org/journals/webref.html.

With feedback from the teacher, the students progressively revise and refine their own products until they are ready to hand in. Products can be prepared with a word processor, using screen captures of photographs, graphics, and quotations from Web sites that are then inserted into a written document. Thus, students not only learn to access

information from sources all over the globe; they also work through the process of creating and editing a polished, professional article.

Once the product is complete, the student move to the next phase of the activity communicating their findings to their teacher and fellow students. Many students use presentation software such as PowerPoint or HyperStudio to enhance their presentations, especially if they wish to use graphics or sound files. Moreover, the dialogue that takes place between student, teacher, and classmates during or after the presentation offers an excellent means for the teacher to assess the depth, breadth, and veracity of the student's work.

The infrastructure that can support such authentic writing activities can be as simple as a Macintosh with HyperStudio, a word processor, and an Internet connection. The important point is that the students do not do their work in isolation; they learn with their peers in a global context. Moreover, they produce products and performances that are original, that are of real value to themselves and their classmates, and that lend themselves to authentic assessment by their teachers.

Practices of this nature provide opportunities for all students, regardless of their learning style, to reach challenging state content and performance standards. Such strategies also help teachers to improve teaching and learning for all students by not only concentrating on basic skills such as vocabulary, grammar and punctuation, but also on improving classroom practice and student learning in a substantial and meaningful

way that fosters higher-level thinking, real-world skills, and lifelong learning the overarching aim of the IASA.

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